

Surface-dependent differences in the adsorption of pancreatic and microbial ribonucleases visualized by atomic force microscopy

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Abstract

A comparative study of the physical adsorption of RNase A and RNase Bacillus pumilis onto a negatively charged surface of mica, a hydrophobic surface of pyrolytic graphite and a surface of lipid layers of dipalmitoylphosphatidylcholine (DPPC) was performed by atomic force microscopy. It was found that microbial RNase, unlike RNase A, 1) is adsorbed onto the negatively charged surface of mica in the form of monomers and dimers; 2) exhibits enhanced tropism to the hydrophobic surface of pyrolytic graphite; 3) modifies morphotopography and thickness of the lipid bilayer of DPPC. The detected surface-dependent differences in adsorption of RNases are consistent with the features of their structure and cytotoxic properties.

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Keywords

AFM, Pancreatic and microbial ribonucleases, RNase